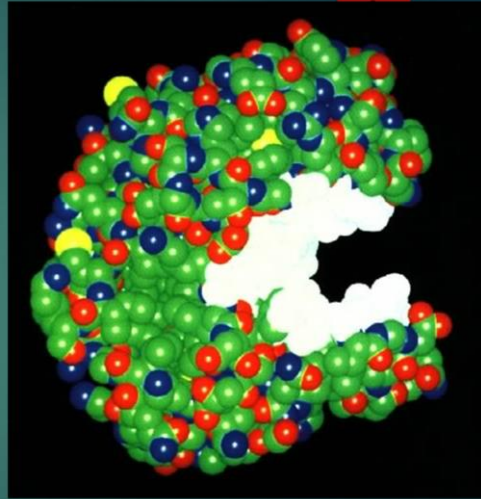


Enzymes

What Are Enzymes?

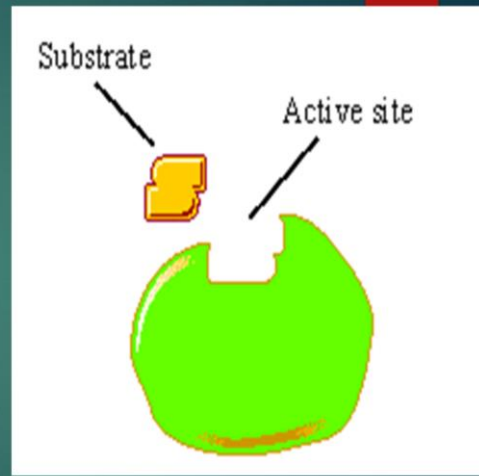
- ▶ Most enzymes are **Proteins** (tertiary and quaternary structures)
- ▶ Act as **Catalyst** to accelerates a reaction
- ▶ **Not permanently** changed in the process



Enzymes

3

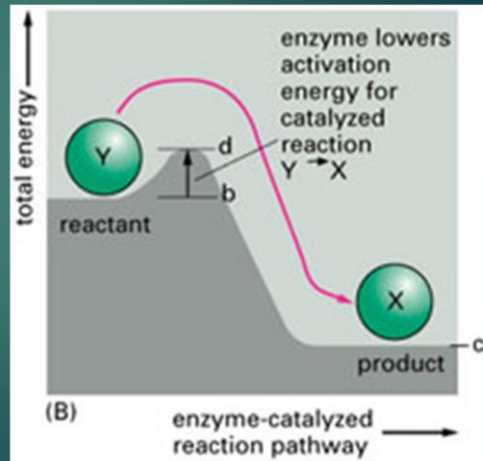
- ▶ Are specific for what they will **catalyze**
- ▶ Are **Reusable**
- ▶ End in **-ase**
 - Sucrase*
 - Lactase*
 - Maltase*



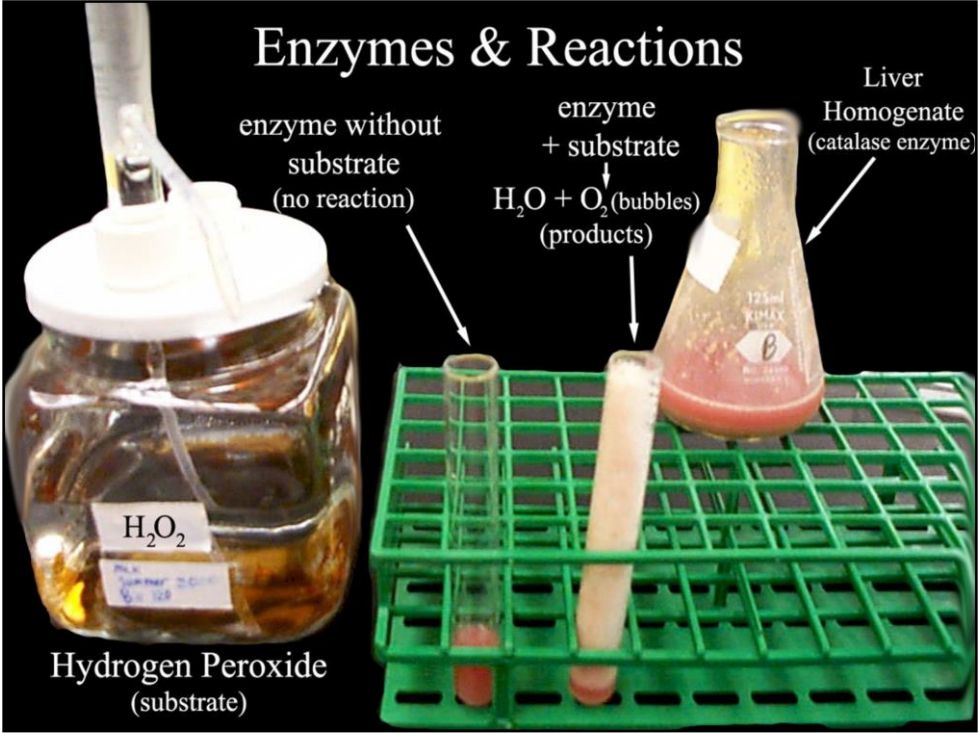
How do enzymes Work?

4

Enzymes work by
**weakening
bonds** which
**lowers
activation
energy**



Enzymes & Reactions



What Affects Enzyme Activity?

6

▶ Three factors:

1. Environmental Conditions
2. Cofactors and Coenzymes
3. Enzyme Inhibitors

1. Environmental Conditions

7

1. Extreme **Temperature** are the most dangerous

- **high temps** may denature (unfold) the enzyme.

2. **pH** (most like 6 - 8 pH near neutral)

3. **Ionic concentration** (salt ions)

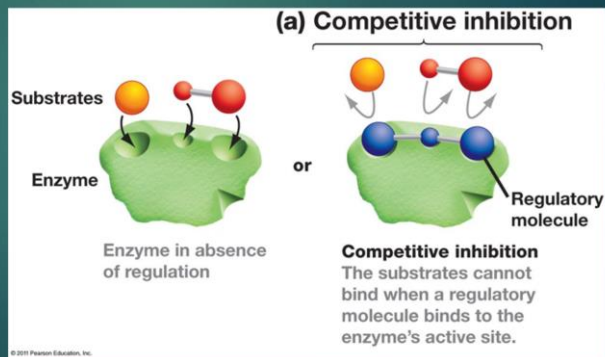
2. Cofactors and Coenzymes

8

- ▶ Inorganic substances (**zinc, iron**) and **vitamins** (respectively) are sometimes need for proper enzymatic activity.
- ▶ Example:
 - Iron** must be present in the quaternary structure - **hemoglobin** in order for it to **pick up oxygen**.

Two examples of Enzyme Inhibitors

- a. **Competitive inhibitors:** are chemicals that resemble an enzyme's normal substrate and compete with it for the active site.



Inhibitors

10

b. Noncompetitive inhibitors:

Inhibitors that **do not enter the active site**, but **bind to another part of the enzyme** causing the **enzyme to change its shape**, which in turn **alters the active site**.

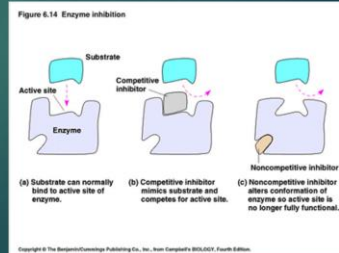


Figure 6.14 Enzyme inhibition

